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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,301	11/10/2003	Jeffery S. Beck	10992120-4	4419

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EXAMINER	
NGUYEN, LAM S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,301	BECK ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 23-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,11-14 and 23-29* is/are rejected.

7)☒ Claim(s) *9-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/06/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Terminal Disclaimer

The terminal disclaimer filed on 06/06/05 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US patent No 6755495 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 3, 6-8, 13, 23, 26, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737).

Bohorquez discloses a fluid ejection device comprising:

an internal power supply path (*FIG. 3: The power line with the resistor Rp*);

a power regulator (*FIG. 3, element 20*) providing an offset voltage (*FIG. 3: The voltage at the positive input of element 16*);

multiple primitives (column 1, lines 50-55: Each primitive has as many as 10-13 resistors that connect to a common return), each primitive including:

a group of nozzles (*column 1, lines 25-35*);

a corresponding group of firing resistors (*FIG. 3, element RH and column 1, lines 25-35*);

a corresponding group of switches (*FIG. 3, element 18*) controllable to

couple a selected firing resistor (*FIG. 3, element RH*) of the group of firing resistors between the internal power supply path and the offset voltage to thereby permit electrical current to pass through the selected firing resistor to cause a corresponding selected nozzle to fire (*FIG. 3 and column 1, lines 25-35*).

Bohorquez does not disclose wherein the power regulator provides the offset voltage ***from the internal power supply path voltage***. In other words, Bohorquez does not disclose wherein the power regulator directly connects to the internal power supply path.

Suzuki discloses a printing head driving apparatus for driving printing elements such as a coil in an impact printer (*FIG. 9-10, element 14b*) or a heating resistor in a thermal printer (*FIG. 13, element 41 and column 7, lines 25-31*). The apparatus has an internal power supply path (*FIG. 9-10, element Vcc*) and a power regulator (*FIG. 9-10, elements 29-30 or 32-33*) directly connecting to the internal power supply path *Vcc* for sensing the variation of the power supply to provide a signal for controlling the driving of printing elements in accordance to variations in the power source voltage (*FIG. 9-10: The voltage at the input of the op-amp 31*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the power regulator disclosed by Bohorquez such as the power regulator provides the offset voltage from the internal power supply path voltage or directly connects to the internal power supply path as disclosed by Suzuki. The motivation of doing so is to drive the printing elements in accordance to variations in the power source voltage in order to gain printing quality as taught by Suzuki (*column 2, lines 36-45*).

Bohorquez also discloses the following claimed invention:

Referring to claims 6, 26: an amplifier receiving an input offset voltage and providing the offset voltage (*FIG. 3, element 16*).

Referring to claims 3, 8: wherein each switch includes a field effect transistor (FET) (*FIG. 3: a switch element 18 comprises a transistor that is replaceable by a field effect transistor (FET) for reducing power consumed*).

Referring to claim 7: wherein the printhead further comprises:

an internal power ground (*FIG. 3: The power line with resistor RR*),

wherein each amplifier (*FIG. 3, element 16*) includes a first input (*FIG. 3: The positive input of element 16*) coupled to the input offset voltage, a second input (*FIG. 3: The negative input of element 16*) coupled to the offset voltage, and an output (*FIG. 3: The output of element 16*); and

wherein the power regulator further includes:

multiple transistors (*FIG. 3, element 18*), each transistor coupled between the internal power ground and the offset voltage and having a gate (*FIG. 3: The input of element 18*) coupled to the output of a corresponding amplifier.

2. Claims 2, 4, 5, 11-12, 24-25, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737), as applied to claims 1, 23, and further in view of Doluca (US 6208127).

Bohorquez, as modified, discloses the claimed invention as discussed above, except wherein the power regulator, which is a linear power regulator (**Referring to claim 2**), includes a current mode digital-to-analog converter (DAC) coupled to the internal power supply path and configured to receive a digital offset command representing a desired offset voltage from a

processor to provide an analog offset voltage from the internal power supply path (**Referring to claims 4, 11-12, 24, 27**), a buffer amplifier configured to receive an analog offset voltage and to provide a buffered offset voltage (**Referring to claims 5, 25**).

Doluca discloses a power regulator such as linear regulators (*column 1, lines 12-24*) including a current mode digital-to-analog converter (DAC) (*FIG. 3-4, elements 330, 430 and column 1, lines 35-45*) configured to receive a digital offset command (*FIG. 3-4, elements 118, 302*) representing a desired offset voltage from a processor to provide an analog offset voltage (*FIG. 3-4, element 332, 432 and column 1, lines 25-35*), a buffer amplifier configured to receive an analog offset voltage and to provide a buffered offset voltage (*FIG. 4, element 450*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the power regulator in the printing system disclosed by Bohorquez, as modified, such as including the digital-to-analog converter (DAC) configured to receive a digital offset command representing a desired offset voltage to provide an analog offset voltage as disclosed by Doluca. The motivation of doing so would have been to obtain "programmable voltage regulators that are used to provide output voltages that can be set to provide the output voltage required" as taught by Doluca (*column 1, lines 25-28*).

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bohorquez (US 5357081) in view of Suzuki (US 4514737) as applied to claim 13, and further in view of Otsuki (US 6145961).

Bohorquez, as modified, discloses the claimed invention as discussed above except wherein the at least one fluid ejection device includes multiple fluid ejection devices.

Otsuki discloses a fluid ejection device including multiple fluid ejection devices, wherein each ejection device ejects different color ink for color printing (*FIG. 6, elements 81-82*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing system disclosed by Bohorquez, as modified, such as including multiple fluid ejection devices for printing multiple colors as disclosed by Otsuki. The motivation of doing so is to provide a printing apparatus that is capable to print multiple colors as taught by Otsuki (*Abstract*).

Allowable Subject Matter

Claim 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reasons for the indication of the allowability of claim **9** is the inclusions therein, in combination as currently claimed, of the limitation that a first switch coupled between the drive line and the control gate of the power transistor and a second switch coupled between the feedback line and the second terminal of the firing resistor is neither disclosed nor taught by the cited prior art of record, alone or in combination.

Claim 10 is allowed because they depend directly/indirectly on claim 9.

Response to Arguments

Applicant's arguments filed 06/06/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the

teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one of ordinary skill in the art would motivate to take a voltage sample directly from the internal power supply Vcc as disclosed by Suzuki (FIG. 9-10) rather than at a voltage divided by the firing resistor R_H and the resistor R_1 as taught by Bohorquez (FIG. 3) to feed it back to the controller for controlling the driving so that the driving is in accordance to variations in the power source voltage in order to gain printing quality. Even though, Suzuki and Bohorquez are different in the way to drive printing elements, both concern the same way to control driving by taking a sample voltage to feedback to a controller in order to adjust the driving.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
August 3, 2005

Hai Pham

HAI PHAM
PRIMARY EXAMINER